

RECYCLED WATER CASE STUDY

University of California, San Diego



The University of California, San Diego is one of the nation's most accomplished research universities, widely acknowledged for its local impact, national influence and global reach. UC San Diego is renowned for its collaborative, diverse and cross-disciplinary ethos that transcends traditional boundaries in science, arts and the humanities. The University's award-winning scholars are experts at the forefront of their fields with an impressive track record for achieving scientific, medical and technological breakthroughs. A leader in climate science research, UC San Diego is one of the greenest universities in the nation

and promotes sustainability solutions throughout the region and the world. Total campus enrollment is 28,500 students (as of fall 2008).

UC San Diego contributes more than \$7.2 billion in direct and indirect spending and personal income each year to the California economy and generates 39,000 jobs. The University's faculty and alumni have created at least 193 start-up companies, including many local biotech companies. The university is the 3rd largest employer in San Diego County with nearly 26,000 employees.

The Connection Process

In 1998, the City of San Diego approached UCSD as recycled water was being delivered to Torrey Pines Golf Course. UCSD was officially the second user of recycled water in the City of San Diego. The first retrofit conversion was at the very northwestern portion of campus (RIMAC Field). Initially, the City of San Diego paid for the cost of the irrigation retrofits to this area and there were few or no problems in the conversions. Phases 2 and 3 followed, adding the Super Computer Building and the Eastside Campus which included the

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Health Science and Research Park, Preuss School, Baseball Field and Warren Field. The City stubbed out these areas and new construction was designed for recycled water, so no retrofits were required. UCSD has plans to further expand the recycled water system to more areas around campus and would like to use it for cooling towers as well. The City performed a cross-connection test at the time of the initial inspection and there are tests conducted every four years as mandated.

Landscape Management Practices

Based on NRCS Soil Survey, about 66% of the RIMAC site is comprised of Carlsbad gravelly loamy sand and about 33% is a Chesterton fine sandy loam. At the Health Science and Research park site, about 60% of the soil is Chesterton-Urban land complex and about 35% is Huerhuero-Urban land complex, requiring fine tuning of drainage and irrigation systems to account for the different soils. Landscape management involves best management practices including analyzing the soils, evaluating drainage, designing irrigation systems and examining fertilizer needs. "It's business as usual at UCSD as far as using recycled water goes—we've adapted to higher salinities but overall recycled water works just fine with our landscapes," stated Chuck Morgan, Assistant Director of Building & Landscape Services.

All recycled water areas are monitored daily for overspray, ponding, and runoff. "We don't want to waste any water, even if it is recycled," stated Morgan. The

irrigation takes place between 9:00 pm and 6:00 am when no supervision is required. They do irrigate during the day periodically, but it is supervised during these times. They monitor their recycled water spraying practices. Staff looks for overspray, and other potential problems, and makes immediate corrections. As part of their annual training, all landscape staff are trained to handle recycled water operations. UCSD has multiple recycled water site supervisors on staff.

Water Quality Issues

The initial high levels of chlorine (in 1998) were damaging the "soft parts" (plastic) of the irrigation system. Hunter Industries and Rainbird, two local irrigation system companies, pilot tested their irrigation system components with the recycled water at UCSD and were coming to the same conclusion—their parts were deteriorating faster than normal due to the high chlorine content. As a result of these tests, both companies adjusted the composition of their irrigation parts and resolved the problem, ultimately benefitting all recycled water users. "Initially, plant loss was our biggest fear due to the salinity, but the plants took the recycled water very well. We haven't had to adjust our landscape practices for recycled water; in fact, the landscape has flourished and kept our campus beautiful," stated Morgan.

Water Costs

The City of San Diego provides recycled water, which is treated at the North City Water Reclamation Plant. UCSD pays \$0.80 per hundred cubic feet for recycled

water vs. \$2.90 for potable. "Although recycled water is still only about 5% of our total water usage, the cost saving is well worth the investments in infrastructure. We have plans to expand recycled water further in the future," stated Morgan.

Public Perception Issues

The students and faculty are very aware of recycled water use on campus. In fact, they want more of the campus on recycled water. Initially in 1998, the faculty was against using recycled water on campus. The City of San Diego arranged a tour of the North City Water Reclamation Plant for the UCSD faculty. After the tour, the fears of the faculty were calmed. They understood the level of effort being put in the treatment to ensure the safety of the public.

UCSD has received recognition from the City of San Diego as being the official second user of recycled water. UCSD promotes recycled water on its website and at sustainability presentations on campus and the recent Water Conservation Summit sponsored by the San Diego County Water Authority.

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San Diego County
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